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York State College of Forestry, Syracuse University.

At the Alabama Polytechnic Institute, Auburn, Alabama, changes in the staff have occurred as follows: Dr. E. P. Sandsten, professor of horticulture and state horticulturist, resigns to accept a similar appointment in Colorado State College. A. B. Massey, formerly assistant professor of botany and bacteriology in Clemson College, becomes assistant professor of botany. H. N. Conolly, field agent in horticulture, resigns to accept similar work in Colorado State College. Charles S. Williamson, Jr., formerly assistant professor, is promoted to associate professorship in the department of chemistry. Jesse M. Jones is appointed head of the department of animal industry, succeeding Dan T. Gray, who has accepted a similar position in the North Carolina Agricultural College.

THE Board of Agricultural Studies of the University of Cambridge, in consultation with the president of the Royal Agricultural Society, has nominated Mr. C. R. Fay, M.A., Christ's College, to be the Gilbey lecturer on the history and economics of agriculture.

#### DISCUSSION AND CORRESPONDENCE

##### THE CHARACTER OF THE ENDOSPERM OF SUGAR CORN

IN a recent publication<sup>1</sup> dealing with the F<sub>2</sub> generation of a cross between two forms of *Zea Mays*, the one with sugar endosperm, the other with waxy endosperm, the existence of two alternative factors, one for sugar (S), the other for waxy (X) is assumed. Absence of S results in waxy endosperm, absence of X results in sugar endosperm. When both are present a horny endosperm results. The F<sub>2</sub> generation, involving 22,132 kernels, consisted of those with horny, waxy and sugar endosperm in a proportion closely approximating the 9:3:4 ratio.

The assumption of two alternative factors

<sup>1</sup> Collins, G. N., and J. H. Kempton, "Inheritance of Waxy Endosperm in Hybrids with Sweet Corn," U. S. Dept. Agric., Bur. Pl. Ind., Circular 120, 1913.

does not meet the requirements, since on this basis a ratio 9:3:3:1 is to be expected. On the basis of Mr. Collins's theory, too, a zygotic construction ssxx, involving  $\frac{1}{4}$ s of the F<sub>2</sub> generation should result in neither a waxy nor a sugar endosperm. Yet the numerical results clearly indicate a sugar endosperm for this portion of the F<sub>2</sub> generation. ("Careful scrutiny of the sweet seeds failed to show any consistent differences that would allow another class to be separated, . . .").

A more plausible explanation suggests itself in an analogy to Cuénot's hybrids between agouti and albino mice. Assuming a basic factor S, responsible for the sugar endosperm, a factor W, which, acting together with S, produces a waxy endosperm, and a modifying factor H, which acting together with the factors W and S produces a horny endosperm, I would suggest for the zygotic constitution of sugar corn HHwwSS, and for the zygotic constitution of *Zea Mays* with waxy endosperm hhWWSS. On this basis the F<sub>1</sub> generation of a cross sugar  $\times$  waxy should possess the zygotic constitution HhWwSS, which, according to our premises, should result, and in fact does result, in a horny endosperm. Selfing of the F<sub>1</sub> generation should yield the following combinations:

HWS HWS	HwS HWS	hWS HWS	hwS HWS
HWS HwS	HwS HwS	hWS HwS	hwS HwS
HWS hWS	HwS hWS	hWS hWS	hwS hWS
HWS hwS	HwS hwS	hWS hwS	hwS hwS

The combinations HHWWSS (1), HHWwSS (2), HhWWSS (2) and HhWwSS (4), should result in a horny endosperm, since they contain all three factors; the combinations HHwwSS (1), HhwwSS (2) and hhwwSS (1), should yield a sugar endosperm, since the factor W is lacking, and the combinations hhWWSS (1) and hhWwSS (2) should produce a waxy endosperm, since the modifying

factor *H* is lacking. Therefore horny, sugar and waxy endosperm should be represented in the proportions, actually found, 9:4:3.

To test for the presence or absence of the factor *H*, here suggested, in sugar-corn a cross should be made with homozygous waxy. Three kinds should be found, the first (*HHwwSS*) yielding horny endosperm only, the second (*HhwwSS*) yielding 50 per cent. horny and 50 per cent. waxy and the third (*hhwwSS*) yielding waxy only.

HENRI HUS

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#### THE YELLOWSTONE PARK

**TO THE EDITOR OF SCIENCE:** In a letter relating to Yellowstone Park which appeared in the issue of SCIENCE for March 21, 1913, there were some statements concerning the experiences which tourists camping out in the park ("sage-brushers," they are usually called) have with the bears, which are certainly astonishing to those who can speak for the sagebrushers if not for the bears. The "cleaning out of sagebrushers' camps by marauding bears" was spoken of as a "nightly occurrence" and it was stated that "three or four sagebrushers are killed nearly every summer in attempting to drive bears out of their camps." My experience as a sagebrusher is that bears will indeed attack the vulnerable part of the camp—the locker containing the store of bacon and the lard can—but even in the vicinity of the Canyon of the Yellowstone, where bears are most numerous, the repelling of an attack on the larder took on much the nature of a midnight sally to rout the neighbor's cow from one's garden patch. There was the same spontaneous rallying against the invasion, the violent laying about with whips and clubs, the resort to loud and picturesque language, and the same clumsy and precipitate retreat of the culprit. Once only we thought it necessary to resort to extreme measures which was to play upon the invaders with a Roman candle. This was completely effective. I would not have a single person miss the great fun and

superior advantage of camping out during the tour of the park because of the fear of the bears.

A statement from Lieutenant Colonel L. M. Brett, acting superintendent of the park, under date of April 5, 1913, should certainly reassure all who contemplate a camping trip. I quote as follows:

As a matter of fact, no tourist or other person has ever been killed by a bear in the park, so far as is known in this office. Our regulations prohibit feeding or meddling with bears, but it is a great temptation for every one to feed them and make pets of them, and the regulations are sometimes violated. Otherwise, there would seldom be any bad bears in the park. As it is, we have instances where the bear becomes dangerous to life and property, and it is necessary to dispose of it. This is done by capture alive and shipment by express to some city zoo, when there is a demand for a bear, and in case there is no demand for it, it is shot. A few instances are on record where people have been attacked and injured by bears. One of these was a tourist; the others were employees of hotels, etc., in the park. In all cases where the facts were known, the person injured was more or less to blame for his own misfortune.

JESSE L. SMITH

#### THE METRIC SYSTEM OF WEIGHTS AND MEASURES

**TO THE EDITOR OF SCIENCE:** I agree with all that Professor A. H. Patterson says regarding the greater simplicity and general desirability of the metric system of weights and measures, but there is, perhaps, something that may be profitably said concerning his reference to "those selfish interests which are blocking the way of reform."

Chief among these interests, perhaps, are the machinery-making concerns of the country, and if Professor Patterson were responsible for the conservation of the capital invested in measuring tools, gauges, fixtures, etc., based upon the present system of measurement, and if he believed that a change to the metric system would make it necessary to discard these tools and gauges, he would, I fear, be strongly tempted to object to the introduction of the metric system, notwithstanding his perception of its superiority.